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Patuxent Wildlife Research Center
Science Brief for Resource Managers

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Wildlife Toxicology Information and Data Gaps for Coastal and Estuarine Habitat of the United States

The Biomonitoring of Environmental Status and Trends program assesses the effects of environmental contaminants on biological resources. A multi-Center project is summarizing contaminant data for terrestrial vertebrates inhabiting estuarine and coastal habitat along the Atlantic, Gulf, and Pacific coasts, Alaska, Hawaii, and Great Lakes. The data is enabling resource managers and scientists to better implement management and conservation programs.

Contaminant Exposure and Effects--Terrestrial Vertebrates (CEE-TV) Database

- Summary information includes contaminant concentrations and biomarker response for terrestrial vertebrates, and can be queried by species, location, and contaminant.
- Data compiled from published literature and unpublished reports from conservation agencies, private groups, and universities.
- Available for scientists, resource managers, and the public at-large at www.pwrc.usgs.gov/ceetv.

- Currently contains more than 11,000 records representing over 400 vertebrate species and 250,000 individuals residing in Atlantic, Gulf and Pacific coast estuaries, Alaska and Hawaii.
- Information on birds makes up the vast majority (76%) of the database, with moderate data on mammals (19%) and reptiles (4%), and only a modicum of data on amphibians (<1%).

Management Implications:

- Gaps in terrestrial vertebrate ecotoxicological data have been identified for 15 watersheds, 42 National Wildlife Refuges, and 17 National Parks that are located in areas having serious water quality problems or high vulnerability.

Biological and Ecotoxicological Characteristics of Terrestrial Vertebrate Species Residing in Estuaries

- Contains biological and ecotoxicological exposure and effects information for 38 terrestrial vertebrates commonly found in estuarine and coastal habitat.
- Available at www.pwrc.usgs.gov/bioeco

Management Implications:

- A *Utility Index* has been developed that ranks species as potential sentinels of environmental contamination; a *Vulnerability Index* assesses the threat of specific contaminant groups to these species.

- These indices assist decision makers in risk assessments of persistent organic pollutants, cholinesterase-inhibiting pesticides, petroleum crude oil, mercury, and lead shot.
- For the Atlantic Coast, no single species, taxa, or class of vertebrates was found to be an ideal sentinel for all groups of contaminants.
- Although birds have overwhelmingly been used to monitor contaminants, several small reptiles and mammals also ranked as excellent sentinels.
- Vulnerability of species varied considerably, with the exception of the bald eagle, which ranked as highly vulnerable to all five contaminant groups.
- These indices have application to many habitat types, and are of value to natural resource and risk managers that routinely conduct local, regional, or national environmental quality assessments.

Geographic Distribution of Records